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# Comparative study between study tracks: math and sciences or humanities, regarding academic motivation and learning strategies in the 9th grade students

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**Abstract**

Indispensable efforts are based on motivation and interest of students, without them, we cannot reach higher on the knowledge scale. A higher motivation or an intentional learning does not improve itself reproductive performance, but only when it is associated with a more laborious processing of the material learned. Facing with school tasks, as the transition from one class to another, students go through a process of awareness of their own possibilities and preferences.
In this paper we started from the assumption that there are significant differences, in terms of learning strategies and academic motivation among ninth graders at study tracks: math and sciences or humanities.



*Keywords*: academic motivation; learning strategies; study track.

## 1. Introduction

The main tool of human development is actually the broad learning, namely the lasting change in the initial behaviour that is based on the gained experience. (Podar, 2005) School performance depends mainly on the operation and interaction of the two components: the cognitive-intellectual and motivational one.

School learning depends not only on external stimulation, teaching style, but also the variables related to students' personality (academic ability, attitudinal, motivational, affective structures, style and learning strategies). (Stănculescu, 2008)

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Student motivation for learning lies in its desire to find the most appropriate cognitive strategies, which they believe will assist in learning. Whether it's about organizing, repetition the information, monitoring comprehensive level or making connections between new and previously acquired knowledge, each student, in part, establishes their order of priority.

The importance of student motivation has varied from peripheral to central in psychological and educational research over the years. Currently, research on student motivation seems to be central to research in learning and teaching context. Researchers interested in basic questions about how and why some students seem to learn and thrive in school context, while other students seem to struggle to develop the knowledge and cognitive resources to be successful academically, must consider the role of motivation. (Pintrich, 2003).

Research exploring the critical question of what motivates human behaviour has a long and distinguished history, but only relatively recently has behaviour in educational settings been a central concern. The field of achievement motivation has matured rapidly, however, generation a great deal of practical knowledge about how instructional practices affect students' motivation. (Stipek, 1996).

Studying disciplines from the perspective of learning and the learner offers some promise for overcoming these difficulties, particularly if learning is defined not in the narrow psychological sense of modification of behavior but in the broader sense of acquisition of knowledge. (Kolb , 1981).

It is natural for achievement motivation researchers to study the effects of educational practices on children's motivation and for subject matter specialists to study the effects of instructional practices on children's learning. (Wigfield & Eccles, 2002).

Our study is related to other research in the field on this theme related to school motivation (Pintrich 2003, Stipek 1996, Wigfield & Eccles 2002, Kolb 1981) besides bringing extra academic motivation and learning strategies assessment in students aged 15-16 years.

This study presents some limitations that are due to the small number of the subjects participating. So, it is not possible to generalize the results obtained to the entire population of the same age.

## 2. Research methodology

### *2.1. Objective:*

Evaluation of school motivation and learning strategies in the ninth grade students, in two different study tracks: humanities, respectively math and sciences.

### *2.2. Hypothesis:*

We assume the existence of some significant differences in terms of learning strategies and academic motivation between ninth grades' study tracks: humanities, respectively math and sciences.

### *2.3. Sample:*

The sample was comprised of a total of 144 students from the: National College "Unirea", National College "Alexandru Papiu Ilarian" and Theoretical High School "Bolyai Farkas", Târgu-Mureş. The entire sample was composed of students aged 15-16 years, in which 99 are girls and 46 are boys.

Samples from the two profiles are equivalent, in terms of numbers and age. Students were divided into two equal groups, in terms of numbers, according to study tracks: humanities, respectively math and sciences.

### *2.4. Working tools*

SMALSI (questionnaire evaluating learning strategies and academic motivation) was elaborated by Kathy Chatham Stroud, Ph.D., and Cecil R. Reynolds, Ph.D. It is a questionnaire that assesses 10 constructs key associated with academic motivation and learning strategies, 7 of them focus on the student's strengths and 3 of them aims its

weaknesses. SMALSI allows identifying learning strategies that may affect academic performance and thus guides and facilitates interventions designed to optimize learning process. SMALSI has 170 items, such as:

"I learn from my mistakes, which I have made in a test, in order not to repeat them in the future",

"I plan the time I need for each homework in part",

"I prefer to stand up late in the night to study before a test."

The test was applied by the authors of the paper, in 6 classes of students, from the three schools mentioned, over 2 months.

The results obtained from the application and interpretation of the test was processed using the statistical software SPSS 2.0

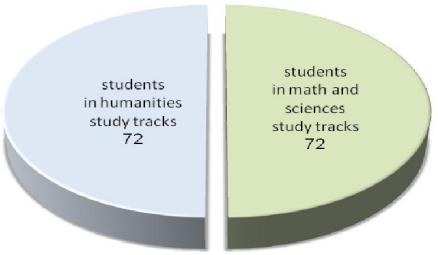


Figure 1.The distribution of the frequency of subjects according to the school profile.

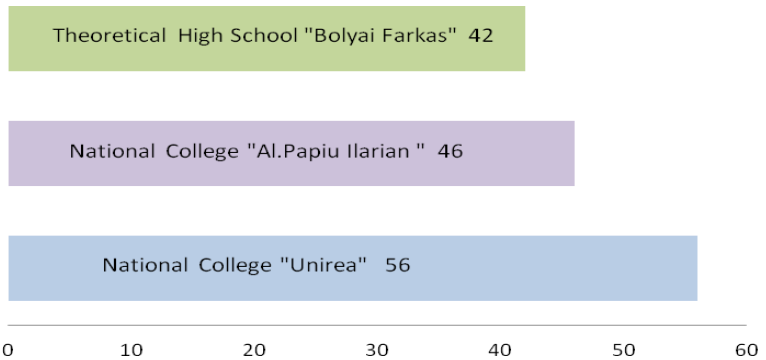


Figure 2.The distribution of the frequency of subjects according to the origin of the school

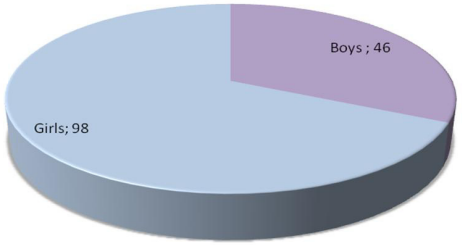


Figure 3. The distribution of the frequency of subjects according to their gender.

Table 1.Presentation of the significant results obtained at correlations:

| | Reading strategies | Difficulty with concentration / attention | Low motivation | Taking notes / listening skills | Organizing techniques | The ability to write/ research | Study strategies | Anxiety over tests | Strategies used in tests | Time management |
|---|---|---|---|---|---|---|---|---|---|---|
| Reading strategies | | .268 | | | | | | .273 | | |
| Difficulty with concentration / attention | | | .344 | -.233 | -.180 | | | .384 | | |
| Low motivation | | | | -.268 | -.229 | -.237 | | .438 | | -.176 |
| Taking notes / listening skills | | | | | .403 | .435 | | | .193 | .263 |
| Organizing techniques | | | | | | .305 | .189 | | .286 | .401 |
| The ability to write / research | | | | | | | | | .290 | 251 |
| Study strategies | | | | | | | | | .182 | .181 |
| Strategies used in tests | | | | | | | | | | .381 |

The results presented in the table above indicate a positive correlation between reading strategies and concentration difficulties, meaning that difficulties in focusing attention, in ignoring disturbing elements, in active participation in school tasks slows the application of comprehension and retention of information from a text strategies, which directly affects school performance. This statement is supported statistically by the value of r=268 at a threshold of significance p<.001.

## 3. Results

There is a positive relationship between concentration difficulties and low academic motivation, on the value of r=344 at a threshold of significance p<.001. Therefore, the lack of students' intrinsic motivation to engage in various academic tasks causes difficulties in focusing attention on the task. As long as the student does not show interest to the work in the classroom, he will not turn his attention to what is required to do, will not adapt to the task and will not ignore any potential troublemakers. He will be tempted to turn his attention to other factors than those related to school tasks.

Likewise, the more he has difficulties in focusing attention on the task, the better will decrease the ability to check important for taking effective notes and organize them, as evidenced by the inverse relationship of the two variables by the value of r =-.233 at p<.001.

At the same time, the higher are the difficulties in concentration, the lower the effective organization of tasks and structuring the received materials, which highlighted the value of r=-180 at p<.001. Likewise, a higher level of anxiety, emotiveness felt by the student in an evaluation directly influence the concentration on the test requirements and thus on school performance (r=384 at p<.001). The latter will be low, since the student can not effectively focus on the task due to excessive concern.

As the lack of intrinsic motivation for academic success is predominant, the lower the ability to select important information; the most affected is efficiency in organizing study materials, research, writing skills, management capacity and efficient use of time needed for school tasks. Therefore, the lack of motivation causes problems in scheduling time, usually students who do not feel motivated, do not plan the study activities, do not appreciate properly the time required to fulfil certain aspects of homework tasks. Furthermore, he shows difficulties to mobilize the research work of a text, the structure and organization of homework tasks. A low motivation leads to experiencing some emotions, fears associated with participation in a test or submission of an assessment.

“Note-taking skills" scale correlate positively with "Organizing techniques", "Writing Skills", "Strategies used in tests" and "Time management" scales (r=403 at p<.001, r=435 at p<.001, r=193 at p<.05 and r=263 at p<.001). Students who are efficient in taking notes and organize them, likewise are doing well in organizing materials received at school; increase their ability to gather information from a variety of sources, to review the materials, to complete complex research tasks, as well successfully uses the mechanisms of information storage, which make it easier the connection between new and prior knowledge. They will know what strategies to use during testing, how to eliminate unlikely answers, how to record key elements extracted from questions, including how to manage the time during the performance evaluation.

The results indicate an interdependent link between "Organizing techniques", "Writing Skills", "Study strategies", "Strategies used in tests" and "Time management" scales (r=305 at p<.001, r=189 at p<.05, r=286 at p<.001, r=401 at p<.001). People who have a good technical organization and structuring of tasks tend to do well on the research topics, organize projects and error checking, at making connections between information already assimilated and most recently, at remembering information. As well, they use much easy and more effective the time for completing school tasks and use with much more competence optimal strategies in the examinations, thereby increasing efficiency, all of which contribute significantly to academic performance.

The data presented in the table above denotes a proportional link between "Used to test strategies", "Time management", "The ability to read / research" and "Study strategies" scales (r=290 at p<.001, r=251 at p<.001, r=182 at p<.05, r=181 at p<.05). The manner in which students researching topics, organizing their projects and check their errors when they take notes, how they use their time for it, directly influences the efficient organization of information and selection the critical data, storing them, in the end the entire process of knowledge assimilation.

The more is better aware of the time frame for completion of the tasks, the more it is used this better, the more you can increase the efficiency of participation in examinations. Using time in their favour, managing assimilation of the information timely will make it easier to use optimal strategies for solving tasks in the tests / examinations. This statement is supported statistically by the value of r=381 at a threshold of significance p<.001.

Table 2. Presentation of significant results obtained from comparing the averages:

| Numbers | Variable | Value of t | Threshold of significance p |
|---|---|---|---|
| 1. | Strategies for reading / understanding | 3.180 | <.05 |
| 2. | Strategies used in tests | 2.972 | <.001 |
| 3. | Study strategies | 3.277 | <.05 |
| 4. | Time management | 3.194 | <.05 |
| 5. | Organizing techniques | 3.944 | <.05 |

## 4. Conclusions:

Statistical analysis made allowed the identification of significant differences between the students in humanities study tracks and students in math and sciences study tracks, as follows:

Developing and implementing some strategies in order to understand and retain information is significantly more important for students in math and sciences study tracks than for students in humanities study tracks, supported statistically by the value of $t=3.180$ at $p<.05$.

The value of $t=2.972$ at a significance threshold of $p<.001$ is an indication that the strategies used in the tests have a greater importance for students in humanities study tracks than for students in math and sciences study tracks. For students in humanities study tracks is important to write down the key elements extracted from questions, to know when it is appropriate to guess the answer, how to eliminate unlikely answers, how to manage during the period of the examination.

On the other hand, students in math and sciences study tracks have more meaningful study strategies: to know how to identify important information, make connections during the process of learning, to use different resources when they do not understand a concept, to use memory strategies and coding ($t=3.277$ to $p<.05$). Students receive a large amount of information during school hours. Therefore, it is important for them to be able to select and organize information from a valid hierarchy, so that they can develop effective study strategies. Likewise, for students in math and sciences study tracks, time management is most important; they are using it effectively than those from humanities study tracks: it is essential to asses correctly the time required to fulfil certain aspects of tasks, to plan learning activities, to allocate time difficulty tasks properly. This statement is supported statistically by the value of $t=3.194$ at $p<.05$.

As well, for students in math and sciences study tracks, organizing techniques are more significant than those from the humanities study tracks. ($t=3.944$ a $p<.05$). Those who develop strategies to organize work in different environments are more efficiently, approach the tasks more organized and structured, which positively influence academic performance.

The academic motivation and learning strategies, after applying SMALSI test, on the subjects concerned, may have significant implications for school success, in terms of self-esteem, reading strategies, organizing techniques, time management.

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